AMENDMENT TO THE CLAIMS

Please amend claims 28, 44 and 146, and add new claims 147-151, as follows.

Please cancel claims 9 and 133.

Claims 1-4 (Cancelled)

5. (Previously Amended) A target system for use with a position determination system in determining the location of a position on a vehicle, comprising:

a target body;

one or more target elements disposed on the target body and detectable by the position determination system; and

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the vehicle, the point definer further including one or more joints that enable the point to be positioned at a different location relative to the target body,

wherein the position determination system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

6. (Original) The system according to claim 5, wherein the one or more joints each allow rotation of the point in one or more axes relative to the target body.

7. (Previously Amended) The system according to claim 5, wherein the point definer includes one joint allowing the point to rotate along one axis, the point being positionable in any one of three positions relative to the target body.

8. (Original) The system according to claim 5, wherein each joint includes a lock to selectively prevent or allow movement of the point relative to the target body.

Claims 9-10 (Cancelled)

11. (Previously Amended) A target system for use with a position determination system in determining the location of a position on a vehicle, comprising:

a target body;

one or more target elements disposed on the target body and detectable by the position determination system;

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the vehicle, and

a trigger for operating the detection of the target system by the position determination system, wherein the trigger operates the position determination system by selectively changing the detection of one or more of the target elements by the position determination system,

wherein the position determination system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

12. (Original) The system according to claim 11, wherein the trigger is movable between one of two positions, and in a first of the two positions, the trigger

conceals the one or more target elements from the position determination system, and in a second of the two positions, the trigger exposes one or more target elements to the position determination system.

Claims 13-16 (Withdrawn)

17. (Previously Amended) A target system for use with a position determination system in determining the location of a position on a vehicle, comprising:

a target body;

one or more target elements disposed on the target body and detectable by the position determination system;

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the vehicle; and

an attachment device to stabilize the position of the target body relative to the vehicle and the point relative to the position of the vehicle to be located,

wherein the position determination system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

18. (Original) The system according to claim 17, wherein the attachment device further comprises a receiver to which the point definer is attached and a connector that connects with the vehicle.

19. (Original) The system according to claim 18, wherein the receiver includes a reference feature that defines the position of the attachment device relative to the point on the point definer.

20. (Original) The system according to claim 19, wherein the connector defines a positional relationship between the position on the vehicle to be located and the reference feature.

21. (Original) The system according to claim 18, wherein the receiver defines a cylindrical recess into which a portion of the point definer is inserted.

22. (Original) The system according to claim 18, wherein the receiver includes a reference feature that defines the position of the connector relative to the point on the point definer.

23. (Original) The system according to claim 18, wherein the attachment device is adapted to be attached to a strut of the vehicle.

24. (Original) The system according to claim 23, wherein the reference feature and the receiver prevent movement of the point definer relative to the attachment device in three axes.

25. (Original) The system according to claim 24, wherein the reference feature is a flat plane bounding a portion of the recess.

26. (Original) A target system for use with a position determination system in determining the location of a position on a vehicle, comprising:

a target body;

one or more target elements disposed on the target body and detectable by the position determination system;

a trigger positioned on the target body and remote from the position determination system, the trigger operating the position determination system by selectively changing the detection of one or more of the target elements by the position determination system; and

a point definer extending from the target body, and the point definer including a point at a distal end of the point definer, the point being capable of being located adjacent the position on the vehicle, and the point being at a known location from the target body,

wherein the position determination system determines a location of the target body after detecting the target elements disposed on the target body.

Claim 27 (Withdrawn)

28. (Currently Amended) A position determination system for determining the location of a position on ~~a vehicle~~ an object, comprising:

a target system including

a target body,

~~one or more~~ at least two visually perceptible target elements disposed on the target body in a two dimensional array configuration ~~and detectable by the position determination system~~, ~~and~~

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the ~~vehicle~~ object,

a handle extending from the target body, positioned and configured to prevent the target elements from being visually obscured when held by a user; and

a vision imaging system configured to acquire an image of the target body to generate image information describing geometric characteristics and positional interrelationships of the target elements disposed on the target body imaged, and to relate such image information to predetermined reference information describing known geometric characteristics and positional interrelationships of the target elements to determine a location and angular orientation of the target body.

29. (Previously Amended) The system according to claim 28, wherein the point on the point definer is at a known location with respect to the target body.

30. (Original) The system according to claim 28, wherein the point is at a distal end of the point definer.

31. (Original) The system according to claim 30, wherein the point is at the vertex of a conical projection at the distal end of the point definer.

32. (Original) The system according to claim 28, wherein the point definer includes one or more joints that enable the point to be positioned at a different location relative to the target body.

33. (Original) The system according to claim 32, wherein the one or more joints each allow rotation of the point in one or more axis relative to the target body.

34. (Previously Amended) The system according to claim 32, wherein the point definer includes one joint allowing the point to rotate along one axis, the point being positionable in any one of three positions relative to the target body.

35. (Original) The system according to claim 32, wherein each joint includes a lock to selectively prevent or allow movement of the point relative to the target body.

36. (Original) The system according to claim 28, further comprising a trigger for operating the detection of the target system by the vision imaging system.

37. (Original) The system according to claim 36, wherein the trigger is positioned on the target body and is remote from the vision imaging system.

38. (Original) The system according to claim 36, wherein the trigger operates the position determination system by selectively changing the detection of one or more of the target elements by the vision imaging system.

39. (Original) The system according to claim 38, wherein the trigger is movable between first and second positions, and in a first position, the trigger conceals the one or more target elements from the vision imaging system, and in the second position, the trigger exposes the one or more target elements to the vision imaging system.

Claims 40-43 (Withdrawn)

44. (Currently Amended) The system according to claim ~~28~~ 147, further comprising an attachment device to stabilize the position of the target body relative to the vehicle and the point on the point definer relative to the position of the vehicle to be located.

45. (Original) The system according to claim 44, wherein the attachment device further comprises a receiver to which the point definer is attached and a connector that connects with the vehicle.

46 (Original) The system according to claim 45, wherein the receiver includes a reference feature that defines the position of the attachment device relative to the point on the point definer.

47. (Original) The system according to claim 46, wherein the connector defines a positional relationship between the position on the vehicle to be located and the reference feature.

48. (Original) The system according to claim 45, wherein the receiver defines a cylindrical recess into which a portion of the point definer is inserted.

49. (Original) The system according to claim 45, wherein the attachment device is adapted to be attached to a strut of the vehicle.

Claim 50 (Cancelled)

51. (Previously Amended) The system according to claim 49, wherein the reference feature and the receiver prevent movement of the point definer relative to the attachment device in three axes.

52. (Original) The system according to claim 51, wherein the reference feature is a flat plane bounding a portion of the recess.

53. (Previously Amended) A position determination system for determining the location of a position on a vehicle, comprising:

a vision imaging system; and

a target system including

a target body;

one or more target elements disposed on the target body and detectable by the vision imaging system;

a trigger positioned on the target body and remote from the vision imaging system, the trigger operating the vision imaging system by selectively changing the detection of one or more of the target elements by the vision imaging system; and

a point definer extending from the target body, and the point definer including a point at a distal end of the point definer, the point being capable of being located adjacent the position on the vehicle, and the point is at a known location from the target body;

wherein the vision imaging system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

Claims 54-124 (Withdrawn)

125. (Previously Added) The system according to claim 5, further comprising a trigger for operating the detection of the target system by the position determination system.

126. (Previously Added) The system according to claim 17, further comprising a trigger for operating the detection of the target system by the position determination system.

127. (Previously Added) The system according to claim 45, wherein the receiver includes a reference feature that defines the position of the connector relative to the point on the point definer.

128. (Previously Added) A position determination system for determining the location of a position on a vehicle, comprising:

a vision imaging system; and

a target system including

a target body,

one or more target elements disposed on the target body and detectable by the position determination system, and

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the vehicle, the point definer further including one or more joints that enable the point to be positioned at a different location relative to the target body;

wherein the vision imaging system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

129. (Previously Added) The system according to claim 128, wherein the one or more joints each allow rotation of the point in one or more axis relative to the target body.

130. (Previously Added) The system according to claim 128, wherein the point definer includes one joint allowing the point to rotate along one axis, the point being positionable in any one of three positions relative to the target body.

131. (Previously Added) The system according to claim 128, wherein each joint includes a lock to selectively prevent or allow movement of the point relative to the target body.

132. (Previously Added) The system according to claim 128, further comprising a trigger for operating the detection of the target system by the vision imaging system.

Claim 133 (Cancelled)

134. (Previously Added) A position determination system for determining the location of a position on a vehicle, comprising:

a vision imaging system; and

a target system including

a target body,

one or more target elements disposed on the target body and detectable by the position determination system,

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the vehicle, and

a trigger for operating the detection of the target system by the vision imaging system, wherein the trigger operates the position determination system by selectively changing the detection of one or more of the target elements by the vision imaging system;

wherein the vision imaging system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

135. (Previously Added) The system according to claim 134, wherein the trigger is movable between first and second positions, and in a first position, the trigger conceals the one or more target elements from the vision imaging system, and in the second position, the trigger exposes the one or more target elements to the vision imaging system.

136. (Previously added) A position determination system for determining the location of a position on a vehicle, comprising:

a vision imaging system;

a target system including

a target body,

one or more target elements disposed on the target body and detectable by the position determination system, and

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the vehicle; and

an attachment device to stabilize the position of the target body relative to the vehicle and the point on the point definer relative to the position of the vehicle to be located;

wherein the vision imaging system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

137. (Previously Added) The system according to claim 136, wherein the attachment device further comprises a receiver to which the point definer is attached and a connector that connects with the vehicle.

138. (Previously Added) The system according to claim 137, wherein the receiver includes a reference feature that defines the position of the attachment device relative to the point on the point definer.

139. (Previously Added) The system according to claim 138, wherein the connector defines a positional relationship between the position on the vehicle to be located and the reference feature.

140. (Previously Amended) The system according to claim 137, wherein the receiver defines a cylindrical recess into which a portion of the point definer is inserted.

141. (Previously Amended) The system according to claim 137, wherein the receiver includes a reference feature that defines the position of the connector relative to the point on the point definer.

142. (Previously Amended) The system according to claim 137, wherein the attachment device is adapted to be attached to a strut of the vehicle.

143. (Previously Added) The system according to claim 142, wherein the reference feature and the receiver prevent movement of the point definer relative to the attachment device in three axes.

144. (Previously Added) The system according to claim 143, wherein the reference feature is a flat plane bounding a portion of the recess.

145. (Previously Added) The system according to claim 136, further comprising a trigger for operating the detection of the target system by the vision imaging system.

146. (Currently Amended) A position determination system for determining the location of a position on ~~a vehicle~~ an object, comprising:

target means including

body means,

visually perceptible element means disposed on the body means in a two-dimensional array configuration ~~and detectable by the position determination system~~, ~~and~~

defining means extending from the body means, the defining means including point means capable of being located adjacent the position on the ~~vehicle~~ object, and

handle means extending from the target body, positioned and configured to prevent the target elements from being visually obscured when held by a user; and

imaging means configured to acquire an image of the body means to generate image information describing geometric characteristics and positional interrelationships of the element means disposed on the body means imaged, and to relate such image information to predetermined reference information describing known geometric characteristics and positional interrelationships of the element means to determine a location and angular orientation of the body means.

147. (New) The position determination system according to claim 28, wherein the object is a vehicle, and

the position determination system determines the location of a position on the vehicle.

148. (New) A target system for use with a position determination system in determining the location of a position on an object, comprising:

a target body;

at least two target elements disposed on the target body in a two dimensional array configuration;

a point definer extending from the target body, the point definer including a point capable of being located adjacent the position on the object; and

a handle extending from the target body, positioned and configured to prevent the target elements from being visually obscured when held by a user,

wherein the position determination system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

149. (New) A position determination system for determining the location of a position on an object, comprising:

a vision imaging system; and

a target system including

a target body,

at least two target elements disposed on the target body in a two dimensional array configuration,

a point definer extending from the target body, the point definer including

a point capable of being located adjacent the position on the object, and

a handle extending from the target body, positioned and configured to prevent the target elements from being visually obscured when held by a user;

wherein the vision imaging system is configured to determine a location of the target body after detecting the target elements disposed on the target body.

150. (New) The position determination system according to claim 149, wherein the object is a vehicle, and

the position determination system determines the location of a position on a vehicle.

151. (New) A position determination system for determining the location of a position on a object, comprising:

a target system including

a target body,

one or more target elements disposed on the target body, and

a point definer extending from the target body, the point definer including

a point capable of being located adjacent the position on the object;

detection means for detecting the target elements disposed on the target body to obtain element information;

first determination means for determining a location of the target body based on the element information obtained by the detecting means to obtain location information of the target body; and

second determination means for determining the location of the point with respect to the target body based on the location information,

wherein the detection means obtains at least three sets of element information obtained from the same target elements located in different locations each time the detecting means detects it while its point is located at the same position on the object,

the first determination means determines the location of the target body based on each of the at least three sets of the element information to obtain at least three sets of location information, and

the second determination means determines the location of the point with respect to the target body based on the at least three sets of the location information.